



Medicine People

Grade: 6

Subject Areas:
Life Science, Social Science

Skills: preparing, modeling, identifying, observing

Duration: 1-2 hours

Connections:
ecology, native plants, ethnobotany, sustainability, Native American studies

Vocabulary

medicine

herbal medicine

herb

herbalist

indigenous

Medicine People

infusion

decoction

tincture

herbal oil

poultice

Objective:

Students will learn about some of the healing properties of plants and will understand that Native Americans used plants as medicine.

Materials

- plant materials (bark, lumber, linen, cotton, food, etc.)
- samples of medicinal plants from the wild
- strainers
- mortar and pestle
- cheese cloth for poultice
- paper cups
- natural sweeteners like honey or stevia (optional)
- water and tissues
- list of Native American plant uses (see attached)
- pre-made oils, decoctions, ointments, etc. (optional)

Standards

Strands: Excellence in Environmental Education Guidelines

Strand 1 — Questioning and Analysis: E) Organizing Information: Learners are able to classify and order data, and to organize and display information in ways that help analysis and interpretation. **F) Working with models and simulations:** Learners understand many of the uses and limitations of models. **G) Developing explanations:** Learners are to synthesize their observations and findings into coherent explanations. **Strand 2 — Env. Processes and Systems: 2.2 The Living Environment: C) Systems and connections:** Learners understand major kinds of interactions among organisms or populations of organisms. **Strand 3 — Skills for Understanding and Addressing Environmental Issues: 3.1 Skills for Analyzing and Investigating Environmental Issues: B) Sorting out the consequences of issues:** Learners are able to apply their knowledge of ecological and human processes and systems to identify the consequences of specific environmental issues.

California State Educational Standards:

Life Sciences (Ecology) 5b: Students know matter is transferred over time from one organism to others in the food web and between organisms and the physical environment
5c. Students know populations of organisms can be categorized by the functions they serve in an ecosystem.
5d. Students know different kinds of organisms may play similar ecological roles in similar biomes.
5e. Students know the number and types of organisms an ecosystem can support depends on the resources available and on abiotic factors, such as quantities of light and water, a range of temperatures, and soil composition.

Background

Natural Medicine

Humans have been closely tied to plants for food, textiles, shelter, tools, and medicine long before recorded history. The use of plants for their healing properties is inherent in all cultures. It is difficult to know exactly how various cultures first learned about medicinal uses of plants because much of this ancient knowledge was not written down. In many cultures, much dedication and attention was put towards understanding the natural cycles of the world and how they corresponded to the world of plants. Correctly identifying plants and knowing when and how to harvest them was passed down from generation to generation. In this lesson, students will learn about different medicinal plants found in the local area.

The word **medicine** comes from the Latin word—*mederi*; meaning “to heal”. According to the World Health Organization, about 80% of all people alive today rely on herbal medicine for some portion of their primary health care. **Herbal medicine** has a long and varied history. It is the art and science of using herbs for promoting health and treating illness and disease. Any part of a plant including the seeds, roots, leaves and bark can be used for medicinal purposes, depending on the species. Just like drugs, however, certain parts of a plant can be poisonous and precautions should be used.

Most plants used in herbal medicine are referred to as **herbs**. Medicinally, an herb refers to any plant or plant part that has a therapeutic value. Even though plants are usually used, other

things besides plants have medicinal properties. Many cultures use minerals and animal parts in their healing medicine.

Ancient Wisdom

Herbalist are people who are knowledgeable about and trained in medicinal plants and their uses. Plants are highly complex organisms. The flow of energy and chemical components within a plant change with the soil, the season and to a lesser degree the phases of the moon. In Fall, for instance, energy in a plant is sent to its roots. In Spring, energy is sent up to the stems, leaves and flowers because this is the period of intense growth. Paying attention to these cycles and knowing when to harvest a plant is part of the holistic approach herbalists integrate into their practice.

Indigenous refers to the first inhabitants of a particular area. The indigenous peoples of North America were the Native Americans. They were intimately linked to the seasons and natural cycles for survival. Their stories and culture had an intimacy with nature that few Europeans can claim. Plants, animals, water and other natural resources gave spiritual guidance as well as life generating properties. Natural things were viewed as having power of their own. Because of this belief, in some tribes, plants with healing properties were known as **Medicine People**. They would have been used in many ways including sacred ceremonies.

Indigenous peoples used trial and error and patient observation to learn about the healing properties of plants.

Much of this ancient wisdom was studied by early European settlers and written down. While every Native American knew what plants cured common complaints like headaches, stomach aches, sore muscles and diarrhea, more serious matters were under the auspices of a healer or shaman. A healer held a distinctive leadership position within a tribe and was highly respected. Aside from performing sacred ceremonies, he or she would have been called in to diagnose, prepare, prescribe and administer various plant remedies to the chronically sick or injured.

Local Healers

The area in and around the King Range National Conservation Area (NCA) is remote. Here, the indigenous tribes were usually isolated from each other by geographic features like watersheds. Because of the isolation of these areas, and the fact that these peoples were often violently forced from their land, little knowledge remains about the intricacies of each culture. Today, we know the main groups included: Yuki (Mendocino and Humboldt Counties), Wailaki (eastern Humboldt), Kato (northern Mendocino), Sinkyone (Sinkyone range), Mattole (Mattole Valley), and the Lassiks (Lassiks). Even though much information about specific uses of plants from these unique cultures has been lost, evidence shows similar uses of plants throughout indigenous tribes (see native plant list).

The world of plants is highly complex. Different plants and different preparations can be used for similar ailments. Common themes and

practices in herbal medicine have been observed, however. Herbs can be used fresh or dried. Dry herbs can be stored for one to three years. Roots and bark last longer than leaves and flowers. The flowers, stems and leaves of plants are easier to prepare and use, however. A person can simply pick these, dry them and make a tea from them. A tea is a kind of **infusion**. To make an infusion, hot water is poured over herbs, steeped for 2-5 minutes and then strained. Roots, bark, and seeds are tougher to break down. In order to break them apart, a **decoction** is often made. To make a decoction, herbs are simmered in water on low heat for 10-15 minutes and then strained.

Modern Uses

Besides infusions and decoctions many other types of preparations can be made. For instance, for topical or external applications, oils or poultices can be applied to the desired area of the body. To make an **herbal oil**, dried herbs are added to a light oil like olive oil or grapeseed oil and left in a warm place for 2-6 weeks. The longer the herbs are infused in oil, the stronger it will be. A lovely oil to make in late summer is St. John's wort oil. Yellow flowers from this plant can be collected and dried. After infused in oil for several weeks, they make a bright red oil. St. John's wort is used topically (externally) on aches and pains. It is one of the many plants found in the King Range NCA. A **poultice** is the application of fresh herbs directly on the skin.

A common way people take herbs today is called a tincture. **Tinctures** would not have been made in Native American herbal medicine, however. To make a tincture, herbs are put into a solvent, usually alcohol, and shaken frequently. The alcohol breaks down many of the plant constituents,

but not all of them. To many purists, infusion and decoctions are preferred. Tinctures are convenient to use, however, and last for years. There are several alternatives to using alcohol in tinctures including glycerine and vinegar, which can be better options for kids to take.

Today, incorporating herbs into the daily health regimes of people is very popular. Drugs can have negative side effects and some are expensive. Most of the chemicals we use for drugs, cleaners, and other applications were found in nature first. For example, aspirin was derived after isolating acetylsalicylic acid from willow bark. Willow is a common small tree or shrub that tends to grow near water. It is also a common plant found in the King Range NCA as well (see attached list).

Incorporating herbs is a wonderful step towards a sustainable lifestyle. Instead of depending on pharmaceutical companies for drugs, people can gain a deeper understanding of their local bioregion by learning about the many medicinal plants growing near them. Many benefits are obtained by incorporating herbs including a healthier lifestyle and a closer connection to nature, similar to that of the Native Americans.

Activity 1

Preparation

This activity can be modified to suit the season and location. Wildcrafting of roots, barks and rare plants is not advised. It is time consuming and requires skilled practice of an herbalist. See the list of common plants that can be used to introduce the concept of Medicine People. Collect plants from a clean area that are plentiful and easy to gather. It is optional to use store bought dried herbs as well.

Set up three stations. One station will make an infusion, one station will make a decoction, and one station will make a hair rinse or decoction.

Procedure

1. Explain to the students that today they will have fun working with plants and learning about some of their healing properties. Before you begin discussing medicinal plants, however, take a few minutes to talk about the important uses plants have in general.

2. Next, ask the students what they know about Native American uses of plants (see background information). Discuss potential uses of plants. Be sure to include important foods such as acorns. Hold up a sample of some local vegetation such as a bough off a madrone tree with berries on it or a clump of bay leaves. See if students can come up with uses for these particular plants. Write the definition for “medicine” and “herb” (medicinally speaking) on the board. It is optional to have the students take notes. Pass out a list of Native American plant

Materials

- plant materials for introducing uses (bark, lumber, linen, cotton, food, etc.)
- samples of medicinal plants from the wild or a garden (see recommendations) Appropriate plants change with the seasons.
- sauce pans for making infusions and decoctions
- strainers for decoctions
- mortar and pestle for making poultices
- cheese cloth for poultice
- paper cups for hot drinks
- natural sweeteners like honey or stevia (optional)
- water and tissues for eye wash or soaproot
- list of Native American plant uses (see attached)
- pre-made oils, decoctions, ointments, etc. (optional)

uses (see attached). Go over some of the words on this list such as infusion, decoction, inflammation, and other vocabulary words. It is optional to show some pre-made oils, decoctions or other herbal supplements.

3. To begin, pass out a bay leaf to each student. Ask them if anybody knows the name of this tree (several will). Have them break the leaf up and place it near their nose. They should inhale slowly. Too much inhalation can give a sharp headache. Have them place the herb on their tongue. It should be extremely astringent. Explain to the students that many of the plants the Native Americans used need to be harvested at various times of the year and many were extremely bitter to the western palate. Bay leaves have many uses. They repel insects like fleas and mosquitoes. A tincture can be used for an anti-fungal like athlete's foot. Some people use bay leaves to flavor food. Stress the importance

of knowing which plants are safe to use. There are many plants that can cause rashes, diarrhea, and other ailments. Many are poisonous. Everybody is probably aware of poison oak for instance.

4. Next, explain that the students

- *Who can tell me one way humans use plants to their benefit? (careful here—in this community you are bound to get a comment about marijuana)*
- *Ask for a few other examples (wood, cloth, paper, food, rope, etc.)*
- *Do plant communities change depending on where they live?*
- *What type of environment might produce a plant with tough, leathery leaves, and fragrant oils?*
- *What clues would a person look for if trying to identify a useful plant?*

Activity 1

are going to make some simple plant medicines. Give some simple instructions for the preparations for each station.

5. Have the students rotate through the stations or have each station prepare a “medicine” for every one else.

6. Once all students have experienced each type of “medicine”, clean up the stations and gather the students around. Have the students share their experiences making and using medicinal herbs. If the students have science journals, have them write a few paragraphs describing their experience.

- *How do you suppose Native Americans gained knowledge about medicinal plants?*
- *Would every one in a tribe know the uses of medicinal plants?*
- *When would a person rely heavily on plants as medicine? (severe cases of bleeding, arthritis, pregnancy, etc.)*
- *What are some local Indian tribes?*
- *Does western society use medicinal plants today?*
- *Has anybody taken herbs as medicine?*
- *What is the difference between a drug and a medicinal plant?*
- *How can plants be prepared for medicinal use?*
- *Which one is gentler on the environment (pharmaceutical drugs or medicinal herbs)?*
- *What are some environmental and health concerns relating to drug use? (water is becoming contaminated by drugs being flushed down the toilet and placed in the garbage)*

Extensions

- Have students research a California Indian tribe and write a report on their culture.
- Invite a local Native American to the classroom to share their culture through story telling or crafts.
- Assign each student a plant used by a local Indian tribe and have them report about it to the rest of the class.
- Read Native American stories and myths
- Have the students compare and contrast tools used in traditional medicine versus modern medicine.
- Using simple identification keys, have students identify several local plant species.
- Plant a native plant garden on campus

References

Basic Herbal Preparations, <http://www.juniperandsage.com/herbs/basic-preparations.php>, 2011
Heizer, Robert F. and Albert B. Elsasser, *The Natural World of the California Indians*, University of California Press, 1980

Herbal Medicine, <http://www.umm.edu/altmed/articles/herbal-medicine-000351.htm>, 2011

Herbal Medicine Fundamentals, <http://www.americanherbalistsguild.com/fundamentals>, 2011

Hoffman, David, *The Herb User's Guide*, Thorsons Publishing, 1987 pgs 9 –13

Moore, Michael, *Medicinal Plants of the Pacific West*, Red Crane Books, 1993.

Murphey, Edith Van Allen, *Indian Uses of Native Plants*, Mendocino county Historical Society, 1959.

INFUSION

1 pint of boiling water poured over up to 1 ounce of dry leaves or flowers, steep for up to several hours. Always use a covered container, preferably of ceramic, glass, stainless steel or enameled other metal; never aluminum or iron. If you are drinking the infusion on a frequent basis you may want to make a large quantity and then refrigerate the extra to drink as desired. You can make enough for about three days.

DECOCTION

Simmer up to 1 ounce root, seed or bark in 1 pint of water for 15 minutes to an hour. Then let the kettle sit off the heat for an hour or more. Strain to drink. This preparation can also be made into quantity and the extra refrigerated.

Note: There are some roots and seeds that should be infused instead of decocted. These are the fragrant ones, which would lose their essential oil while boiling. The essential oils are an important medicinal part of the remedy. Examples are anise, fennel and fenugreek seeds and valerian and elecampane roots.

COLD INFUSION

Cold water can be used if the volatile compounds of the herbs are such that they may be lost in the steam or for the mucilaginous slippery elm bark. A sun tea is a cold infusion that is allowed to set in the sunshine to infuse, usually in a glass jar.

TINCTURE

Alcohol: Conforming to the standards recommended by the International Protocol as adopted at Brussels, 1902.

1. Dried toxic/intense botanical, 1:10 w/v (1 ounce herb to 10 ounces alcohol).
2. Dried non-toxic botanical, 1:5 w/v (1 ounce herb to 5 ounces alcohol).
3. Fresh botanical, 1:2 w/v (1 ounce herb to 2 ounces alcohol).

The preferred alcohol used for tincturing is 190 proof grain alcohol, which is in turn diluted with distilled water to the correct percentage of alcohol. If you are in a state in which you cannot buy this strength of alcohol, you may have to resort to vodka.

The best method to determine the alcohol content to use is to look it up in an old pharmacopia, printed before 1920 or so (really difficult to find). Here is a list of percentages of alcohol that will dissolve the chemical constituents. I was given this list many years ago in a class and have worked with it ever since. These are not absolutes, but can be a help if you are in doubt.

- Tannins and glycosides 25%
- Alkaloids 45%
- Volatile Oils 60%
- Gum resins 90%

Macerate (soak) the finely chopped herbs in the alcohol for 14 days, shake daily. Strain and press all alcohol from herbs. Bottle this and you have your own tincture.

Vinegar: Pour full strength vinegar over finely chopped dry herbs, at a ratio of 1:5, or 1:2 for fresh herbs. Macerate for 14 days, shaking daily. Strain and press all vinegar from the herbs.

Vinegars are fascinating to use. The information for preparation above is intended for medicinal use, but vinegars are very versatile and useful. Depending on the herbs used you can have a medicine, a salad dressing or a cosmetic preparation. They can be used straight for cooking in any way that you would use a plain vinegar. The cosmetic vinegar is best diluted in half with water before use on your skin or one tablespoon to a cup of water for a hair rinse.

Taken from <http://www.juniperandsage.com/herbs/basic-preparations.php>

RECOMMENDATIONS FOR KIDS

Bay or Laurel leaves to smell and crush. These are very bitter and would be best used to talk about the potency of plants. Bay leaves repel insects. Good for places with fleas. Kids can sniff a leaf after breaking it and talk about what sensation they experience as an introduction.

Lather the large bulbs of soaproot or Amole lily (*Chlorogalum*) by dipping in water. Students could strip the bulbs of their protective fibers first. It is also optional to chop the bulbs in pieces and make a poultice. The poultice can then be rubbed between fingers to form a soapy lather. Mostly used as a hair treatment.

INFUSION

Pour 1 cup of boiling water over 1-2 tsp. of dried herb or 1-2 Tbls of fresh herbs. Let sit until cool enough to drink.

Recommended herbs safe for kids (top portion of plants):

Peppermint, Western coltsfoot (*Petasites*), meadowsweet, redwood needles, wild ginger (*Asarum*) mullein (colds, coughs and congestion).

Lemon balm (*Melissa*), yerba buena (*Satureja*), wild ginger (*Asarum*), raspberry and blackberry leaves (for taste) stevia or honey to sweeten.

DECOCTION

Simmer fresh or dried herbs in hot water for 15-30 minutes. Strain to drink. a standard ratio of 1 T of dry herbs per cup but more water is necessary for stronger herbs. Many roots and berries are bitter. I would stay away from Manzanita and madrone berries if you want kids to enjoy what they are drinking.

Recommended herbs safe for kids:

Rose hips, licorice, fennel seed, cinnamon, marshmallow root.

POULTICE

1. Apply the fresh, crushed herb to the part due treatment or bandage.
2. Prepare standard decoction or infusion and add to slippery elm bark until a thin paste is obtained and bandaged.
3. Dip a clean cloth into a strong infusion or decoction and wring it almost dry. Apply this to the afflicted area.

Recommend safe, abundant and fun to use—plantain (*Plantago*). Students can mash this one up and apply it as a poultice to any scratch or bruise.

Self Heal (Prunella vulgaris) another for gums, sores and bites

Poultice of False Solomon Seal (Smilacina) and Grindellia (gum plant) for poison oak.

Pieces of Cucumber place over eyes

Information from Medicinal Plants of the Pacific West by Michael Moore



TREES

White and Red Alder

Bark infusion used for stomach aches as a blood purifier, and to facilitate child birth. Powdered willow bark mixed with dry rot from the tree was used to make a poultice for burns.

Willow

Bark tea for back pain, general pain and swellings.

California Laurel (Bay)

Boughs of laurel were hung in houses or leaves were stewed on the floor to keep the house free from fleas. Leaves put in hot water were used to bath rheumatic patients.

SHRUBS/EPIPHYTES

Wolf Moss (Evernia)

Used by the Yukis and Wailakis for drying up running sores. A thick decoction was made.

Wild Rose

Tea made of roots for colds (rose hips are a good source of vitamin C). Bark was used for medicinal tea. Seed cooked for muscular pains.

FORBS

California Poppy

Leaves were chewed to alleviate toothaches.

California Everlasting

Leaves were used as a poultice and applied to swellings. A decoction of leaves were taken for colds and stomach troubles.

California Mugwort

Decoction of leaves taken for headaches, colic, bronchitis and rheumatism. It was taken after childbirth to promote blood circulation.

Wild Ginger

Fresh leaves used in poultices to apply to boils and general swellings.

Thin Solomon Seal

Roots were harvested in the Fall and dried and powdered and then placed on bleeding wounds. Infusion from roots to ease female trouble and internal pain

Pennyroyal (cautionary)

Tea of leaves were gathered when plants were in seed and used for kidney complaints

Self Heal

Infusion used for a weak heart; leaves placed on cuts, bruises and skin inflammations.

Cascara Sagrada

Infusion of bark used as laxative. Berries were eaten as an emetic (induces vomiting).

Elderberries

Tea from the flowers helped with coughs (purgative) and used as a diuretic. A poultice of roots were applied to any inflammation.

Acacia

Dried leaves were used for inflammation of eyes. Acacia seeds were also applied to tired eyes of weary travelers.

Oregon Grape

Roots steeped in water for general aches and pains or to create appetite. Root peeled and dried to stop rectal hemorrhage (bleeding) and to help with dysentery.

Usnea or Old Man's Beard (lichen)

Modern; not in Native American texts.

Elk Clover or Spikenard

A tea of the roots (decoction) was taken for colds, fevers, open sores and for diseases of lungs and stomach.

Yarrow

Tea from the leaves and flowers taken for stomach ache, headache and colds; a poultice was used to stop blood; a lotion was put on sore eyes.

Yerba Santa

tea from leaves and flowers used to cure colds, coughs and sore throats.

Blue Flax

An infusion of roots was cooled and applied to sore and tired eyes.

Plantain

Tea from whole plants and poultices were applied to battle bruises. Raw leaves were applied to wounds as well.

WILDHARVESTING GUIDELINES

by Jessica Gordino

1. Start with a few easily recognized plants, and get to know new plants slowly.
2. Study the poisonous plants that grow in your area, and always know whether the plant you're harvesting has any poisonous lookalikes.
3. Always be sure you have identified a plant correctly, either through the use of a field guide or an experienced harvester.
4. Give your full attention to your task; it's easy to make mistakes if you're distracted.
5. Some plants have parts that are edible and parts that are toxic (example; violet), and some plants have parts that are edible at certain times of the year but toxic at others (example; pokeweed). Make sure you know which part to use, and when to harvest it.
6. As with all foods, some plants will not agree with certain people. Start with small amounts of any wild food that is new to you.
7. Ask permission before harvesting on someone else's property
8. Avoid areas that are likely to be sprayed, for example around power lines, train tracks, golf courses, and weedless yards. Don't gather within 50 feet from a busy road, especially downhill from one.
9. Return often to your harvesting sites, to get to know the plants at different phases of their lifecycle.
10. Learn which plants are endangered in your area and avoid harvesting them altogether. (Luckily, many edible and medicinal plants are prolific weeds, and you don't need to worry about over-harvesting.)

http://www.susunweed.com/An_Article_wisewoman3.htm